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SOME OBSERVATIONS CONCERNING THE AMERICAN
FAMILIES OF OLIGOMYODIAN PASSERES.*

BY ROBERT RIDGWAY.

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This section of the Superfamily Mesomyodi† comprises, according to Dr. Scater, eight family groups, namely, the "Oxyrhamphidæ" (Oxyruncidæ), Tyrannidæ, Pipridæ, Cotingidæ, Phytotomidæ, Philepittidæ, Pittidæ and Xenicidæ, all of which, except the three last named, are peculiar to America, the families of Mesomyodi being distinguished in Dr. Scater's "keys" as follows:

OLIGOMYODÆ.‡

- | | | |
|--|---|------------------|
| a. Tarsus exaspidean. | | |
| a ¹ . Toes nearly free (as in the Oscines). | | |
| { Bill incurved, hooked | - | 1. Tyrannidæ. |
| { Bill straight, pointed | - | 2. Oxyrhamphidæ. |
| b ¹ . Toes more or less united | | 3. Pipridæ. |
| b. Tarsus pycnaspidean. | | |
| { Bill elongated, compressed, not serrated | - | 4. Cotingidæ. § |
| { Bill short, conical, serrated | - | 5. Phytotomidæ. |
| c. Tarsus taxaspidean | - | 6. Philepittidæ. |
| d. Tarsus ocreate. | | |
| { Rectrices 12 | - | 7. Pittidæ. |
| { Rectrices 10 | - | 8. Xenicidæ. |

* *Oligomyodæ* Huxley, Proc. Zool. Soc. Lond., 1867, 471, part (includes Eurylaimidæ).—*Oligomyodi* Garrod, Proc. Zool. Soc. Lond., 1876, 517 (Eurylaimidæ excluded).—*Haplophonæ* Garrod, Proc. Zool. Soc. Lond., 1876, 517, 518 (comprises Tyrannidæ, Rupicolidæ, and Pipridæ); Forbes, Proc. Zool. Soc. Lond., 1880, 389-391 (adds Philepittidæ and "Acanthisittidæ" = Xenicidæ).—*Tyrannoideæ* Stejneger, Standard Nat. Hist., iv, 1885, 460, 463.

† See Birds of North and Middle America, I, p. 16.

‡ Cat. Birds Brit. Mus., xiv, 1888, 2.

§ The Cotingidæ of Dr. Scater includes the Rupicolidæ.



TRACHEOPHONÆ.*

- A. Sternum with one pair of posterior notches.
- | | | |
|-----------------------|---------|------------------------------|
| a. Tarsus endaspidean | - - - - | 1. Dendrocolaptidæ. † |
| b. Tarsus taxaspidean | - - - - | 2. Formicariidæ. |
- B. Sternum with two pairs of posterior notches.
- | | | |
|-----------------------|---------|--------------------------|
| a. Tarsus exaspidean | - - - - | 3. Conopophagidæ. |
| b. Tarsus taxaspidean | - - - - | 4. Pterotochidæ. |

It is thus seen that the character of the tarsal envelope is Dr. Selater's chief reliance in the discrimination of these groups. This character is undoubtedly one of considerable importance, probably the most important of any single external character; but unfortunately when carefully tested it does not work out so beautifully as would appear from Dr. Selater's presentation of the case. If it did, certain genera referred by him to the Tyrannidæ would belong to the Cotingidæ, while a considerable number of genera referred by him to the latter group could not be placed at all, since their tarsal envelope is neither exaspidean, pycnaspidean, taxaspidean, nor ocreate. It is evident, therefore, that a really "workable" key must be based on other characters in addition to that of the tarsal envelope. An effort to devise a satisfactory one has engaged a considerable amount of my time; but, while I believe that some improvement has been made, I must confess that it does not wholly satisfy me, and the results are herewith presented only as a provisional classification, with the observation that a really natural one is scarcely possible until the internal structure of all the genera has been studied.

PROVISIONAL KEY TO THE FAMILIES OF MESOMYODI.

- a. *Syrinx broncho-tracheal* (typically Passerine). (*Oligomyodi.*)
- b. Syringeal muscles anachromyodous; tarsal envelope exaspidean; middle toe coherent with outer toe for not more (usually less) than the whole length of its basal phalanx.
- c. Bill cuneate, its tip acute and not at all uncinatè.
1. **Oxyruncidæ.**
- cc. Bill not cuneate nor acute, its tip more or less uncinatè.
2. **Tyrannidæ.**
- bb. Syringeal muscles catachromyodous; tarsal envelope not exaspidean, or else (Pipridæ) the middle toe coherent with outer toe for more than its basal phalanx or (genus *Pipreola* of Pipridæ) coherent with inner toe for whole of its basal phalanx.
- c. Temporal fossæ normally Passerine.
- d. Intrinsic muscles normally catachromyodous; tongue not penicillate.

* *Cat. Birds Brit. Mus.*, xv, 1890, 2.† The *Dendrocolaptidæ* of Dr. Selater includes the very distinct family *Furnariidæ*.

e. Rectrices 12; bill not subulate nor acute; tarsal envelope not fused.

f. Heteromerous (the main artery of the thigh femoral).

g. Tarsal envelope exaspidean (as in Oxyruncidæ and Tyrannidæ); second phalanx of middle toe partly (sometimes wholly) coherent with outer toe or else (genus *Piprites*) the first phalanx wholly coherent with inner toe.

3. Pipridæ.

gg. Tarsal envelope not exaspidean (usually pycnaspidean, holaspidean or modified taxaspidean); second phalanx of middle toe wholly free from outer toe (or else, in genus *Phœnicircus*, inner side of tarsus feathered), never wholly coherent with inner toe. - **4. Cotingidæ.**

ff. Homœomerous (the main artery of thigh sciatic).

g. Bill compressed, with smooth tomia; head with a conspicuous, compressed, semicircular, bilateral crest; outermost primary abruptly attenuated at tip; inner secondaries abnormally broad, truncated. - - **5. Rupicolidæ.**

gg. Bill conical (finch-like), with serrated tomia; head without crest; outer primary and inner secondaries normal.

6. Phytotomidæ.

ee. Rectrices 10; bill subulate, acute; tarsal envelope fused (ocreate). - - - - - **7. Xenicidæ.***

dd. Intrinsic muscles peculiarly expanded at lower insertion, not attached to bronchial semirings, which are peculiarly modified; tongue penicillate. - - - **8. Philepittidæ.**

cc. Temporal fossæ extending across occipital region of skull, the two of opposite sides nearly meeting on median line. **9. Pittidæ.**

aa. Syrinx tracheal. (*Tracheophonæ.*)

b. One pair of tracheo-bronchial muscles; tarsal envelope exaspidean or taxaspidean; metasternum 4-notched (except in Formicariidæ).

c. Metasternum 4-notched; tensor patagii brevis quasi-picarian; nares holorhinal.

d. Tarsal envelope exaspidean; no intrinsic muscles; sterno-trachealis not attached to processus-voales; palate schizognathous; mesorhinium normal; nostrils not conspicuously operculate. - - - - - **10. Conopophagidæ.**

dd. Tarsal envelope taxaspidean; intrinsic muscles present; sterno-trachealis attached to processus-voales; palate aegithognathous (Oscine); mesorhinium compressed and arched, or expanded into a flattened oval shield; nostrils conspicuously operculate. - - - - - **11. Pteroptochidæ.**

cc. Metasternum 2-notched; tensor patagii brevis normally Passerine; nares schizorhinal. - - - - - **12. Formicariidæ.**

bb. Two pairs of tracheo-bronchial muscles; tarsal envelope endaspidean; metasternum 2-notched.

* See Pycraft, Ibis, Oct., 1905, 603-621, pl. 13, where the possibility of nearer relationship to Furnariidæ is suggested.

- c. Nares holorrhinal or modified schizorrhinal; palate schizognathous; outer toe much shorter than middle toe (not conspicuously longer than inner toe), the three anterior toes coherent for much less than full length of their basal phalanges. 13. **Furnariidæ.**
- cc. Nares holorrhinal; palate aegithognathous or semi-desmognathous; outer toe nearly (sometimes quite) as long as middle toe, both conspicuously longer than inner toe, the three anterior toes coherent (fused) for entire length of their basal phalanges. 14. **Dendrocolaptidæ.**

It should be stated here that the Tracheophonæ have not yet been critically studied by me and that the above scheme is purely eclectic. It may be that when these are taken in hand a similar nonconformity of the character of the tarsal envelope to Dr. Selater's keys may be discovered as in the case of the Cotingidæ. The same remarks apply in part to the Oligomyodian family Pittidæ.

So few of the Mesomyodian forms have been studied as to their internal structure that I feel sure a satisfactory increase of our knowledge in this respect will result in more or less fundamental modification of our present views as to their classification. The anachromyodous syrinx and homœomerous thigh-artery of many genera of Tyrannidæ as well as the catachromyodous syrinx and heteromerous thigh of many forms of Pipridæ and Cotingidæ are, for example, merely assumed, and there may be many exceptions to these supposedly diagnostic characters of the groups in question. So far as external characters are concerned, certainly some genera commonly referred to the Cotingidæ can be separated from the Tyrannidæ only by their non-exaspidean tarsal envelope, and at the same time certain genera commonly referred to the Tyrannidæ also have the tarsal envelope non-exaspidean. In the group called Cotingidæ the character of the tarsal envelope is exceedingly variable, and the homogeneity of the group is open to very serious doubt. Of all external characters, to which present recourse is necessarily limited, the character of the tarsal envelope is by far the most nearly diagnostic, for the Oligomyodi may be sharply divided into two major groups, one of which, comprising Oxyruncidæ, Tyrannidæ (as here defined) and Pipridæ, having the tarsus exaspidean, the other, comprising Cotingidæ, Rupicolidæ, and Phytotomidæ, among American forms, having the tarsus

non-exaspidean. I am led to attach great value to this character for the reason that no matter how great the variations in general form or specialization of other characters within the Tyrannidæ and Pipridæ the character of the tarsal envelope is practically uniform throughout these groups.

TYRANNIDÆ.

In order to get as clear an understanding as possible of the classification of the Tyrannidæ, all the genera available* have been carefully examined and compared. Many days were devoted to an attempt to construct a "key" to all the genera in hand, but it finally became evident that the undertaking was much too formidable for the limited time which could be devoted to it, and therefore it became necessary to restrict the key to those genera belonging to North and Middle America, together with a few South American genera which were included for purpose of comparison. Even with this elimination of half the genera the task has proven exceedingly difficult and the results far from satisfactory, although it is believed that some improvement has been made over the "purely provisional" arrangement in Vol. XIV of the "Catalogue of Birds in the British Museum," in which the so-called families are without question purely artificial and the allocation of certain genera obviously wrong.† The subject has called forth a very pertinent and interesting paper by Dr. von Ihering,‡ in which a partial reconstruction of Dr. Selater's "subfamilies," based on biological facts (chiefly the character of nests and eggs), is shown to be necessary, the proposed changes being as follows :

- (1) The Tæniopterinae restricted by elimination of the genera *Sayornis*, *Sisopygis* and, probably, *Machetornis*.
- (2) The Platyrhynchinae divided into two groups, *Euscarthminæ* and *Serpophaginae*.

*The only genera not seen by me are *Ochthornis* Selater, *Ceratotriccus* Cabanis, *Pseudotriccus* Taczanowski and Berlepsch, *Leptotriccus* Cabanis and Heine, *Pseudomyobius* Salvadori and Festa, *Planchesia* Bonaparte, *Tæniotriccus* Berlepsch, *Chæomyias* Berlepsch, and *Acrochordopus* Berlepsch and Hellmayr.

†As an example may be cited the reference of one species of *Sayornis* (than which there are few if any more natural genera) to the "Tyranninae" and the remaining species to the "Tæniopterinae," almost at opposite extremes of the arrangement!

‡The Biology of the Tyrannidæ with respect to their systematic arrangement. The Auk, XXI, July, 1904, 313-322.

(3) The Elaininæ restricted by elimination of the genera *Rhynchocyclus*, *Legatus*, *Myiozetetes*, *Conopias*, *Pitangus*, *Sirystes*, and *Myiodynastes*, which, except the first (referred to the Euscarthminæ), should constitute a subfamily Pitanginæ, morphologically intermediate between the Elaininæ and Tyranninæ, and doubtfully separable from the latter.

In my opinion these suggested modifications in the arrangement of the Tyrannidæ are, in the main, entirely justifiable; but I am convinced that they are but a step toward much more radical changes which will be necessary before a satisfactory exposition of the phylogeny of the group can be made; and, while not prepared to forecast these with any degree of certainty will express my belief that (1) the genera *Agriornis* and *Muscisaxicola* are each quite sui generis and are not by any means as closely related to *Tænioptera* as the latter is to *Tyrannus*; and (2) that a considerable number of genera do not belong to the Tyrannidæ at all but must be transferred to other groups, since in none of them is the tarsal envelope exaspidean, the only external character except that of slight syndactylism (very variable within the group) which can be said to be really diagnostic of the family. These genera are (1) *Lawrencia* which has a typically Oscine tarsus and is without doubt a member of the Vireonidæ. (2) *Stigmatura*, (3) *Hapalocercus*, and (4) *Habrura*, which have taxaspidean tarsi; (5) *Muscigralla*, (6) *Sirystes*, (7) "*Myiarchus*" *validus* and (8) *Ramphotrigon*, which have essentially holaspidean tarsi; (9) "*Pogonotriccus*" *zeledoni*, (10) "*Myiopagis*" *gaimardi*, (11) *Tyrannulus elatus*, (12) "*Tyrannulus*" (i. e. *Microtriccus*) *semiflavus* and *brunneicapillus*, and (13) *Ornithion inerme*, which have essentially pycnaspidean tarsi, and (14) *Culicivora*, which has non-exaspidean tarsi and only ten rectrices.

These genera, which I conclude do not belong to the Tyrannidæ, unless some new definition of the family be made, may be again referred to in order to show more clearly why they should be excluded from the group under consideration, as at present susceptible of definition.

1. *Lawrencia* Ridgway.

(Type *Empidonax nanus* Lawrence.)

This genus has a typical Oscine acutiplantar tarsal envelope. It has ten obvious primaries, of which the tenth (outermost) is about half as long as

the ninth; the basal phalanx of the middle toe is completely united to the outer toe and almost wholly adherent to the middle toe, thus agreeing, as in the wing-structure, with the Vireonidæ. In fact, except for its depressed and broadly triangular "flycatcher"-like bill, the bird is minutely similar to *Vireo pusillus*.

2. Stigmatura Sclater and Salvin.

(Type, *Culicivora budytoides* D'Orbigny and Lafresnaye.)

This bird resembles in general form and appearance the Formicariine genus *Formicivora*, and probably belongs to the same family.

3. Hapalocercus Cabanis.

(Type *Euscarthmus meloryphus* Maximilian.)

This also is possibly Formicariine in its relationships. One species has been referred to it which has the typical Tyrannine exaspidean tarsus and therefore can not be congeneric. This is *Alectrurus flaviventris* D'Orbigny and Lafresnaye (*Hapalocercus flaviventris* Cabanis, Sclater, and others), type of the genus *Myiosympotes* Reichenbach (Av. Syst. Nat., 1850, pl. 65), and therefore to be known as *Myiosympotes flaviventris*. I have not seen *H. fulviceps* (*Euscarthmus fulviceps* Sclater) nor *H. acutipennis* Sclater and Salvin, and therefore can not say whether they are congeneric with *H. melacoryphus* or not; but the former doubtless is, since what is said to be a very near relative, *H. paulus* Bangs, is a true *Hapalocercus*.

4. Habrura Cabanis and Heine.

(Type, *Sylvia pectoralis* Vieillot.)

The tarsal envelope of *Habrura*, while less typically taxaspidean than that of *Hapalocercus* is by no means exaspidean. The inner side of the planta tarsi consists of a single continuous series of well-defined quadrate scutella; but on the outer side of the tarsus the acrotarsium extends quite to the posterior edge except for the upper third, where three or four rather large and very distinct longitudinal scutella occupy approximately the posterior half. The last character is seen in many typical Tyrannidæ; but in none of the latter is there ever any indication of the well-defined and continuous series of scutella along the posterior half of the inner side of the tarsus. The nostrils in *Habrura* are quite different from those of *Hapalocercus*, being roundish and nonoperculate while in the latter they are more longitudinal, relatively larger, and overhung by a rather large membranous operculum. The proper place for these two genera is a question which I am not able to decide, but *Habrura* may not be out of place in the Cotingidæ while, as suggested above, *Hapalocercus* may belong to the Formicariidæ.

5. Muscigralla D'Orbigny and Lafresnaye.

(Type, *M. brevicauda* D'Orbigny and Lafresnaye.)

The appearance of this very peculiar form does not in the least suggest to me any relationship with the Tyrannidæ, while its holaspidean tarsi certainly exclude it from that family. Possibly it is a Formicarian.

6. *Sirystes* Cabanis and Heine.

(Type, *Muscicapa sibilator* Vieillot.)

This genus has the arrangement of the tarsal envelope precisely as in the Cotingine genera *Lipaugus* and *Casiornis*, and if these belong to the Cotingidæ there can be no doubt that *Sirystes* does also.

7. “*Myiarchus*” *validus* Cabanis.

(Type of genus *Hylonax* Ridgway.)

The same remarks apply to this as to *Sirystes*, and I would place *Hylonax* between the above-named genera and *Attila*.

8. “*Pogonotriccus*” *zeledoni* Lawrence.

(Type of genus *Idiotriccus* Ridgway.)

In this curious form the tarsus may be called ultra-pycnaspidean, for not only the planta tarsi but also the lower portion of the acrotarsium is broken up into numerous small scutella, which on the lower portion of the tarsus are almost tuberculate. I have not seen the type species of the genus *Pogonotriccus* Cabanis and Heine (*Muscicapa eximia* Temminck) and therefore can not say whether the latter is Tyrannine or not. The only species commonly referred to the genus that I have been able to examine, besides *Idiotriccus zeledoni*, is *P. plumbeiceps* Lawrence, which von Berlepsch places in the genus *Tyranniscus* Cabanis and Heine, an allocation in which I entirely agree.

9. “*Elainea*” *gaimardi* (D'Orbigny).

(*Muscicapa gaimardi* D'Orbigny, = *Elainea elegans* Pelzeln, type of genus *Elainopsis* Ridgway.)

This bird, while superficially resembling very closely the Tyrannine genus *Myiopagis* Salvin and Godman has essentially pycnaspidean tarsi, the acrotarsium extending only a little more than half way across the outer side of the tarsus and the planta tarsi covered with minute scutella. I therefore refer it to the Cotingidæ.

10. *Tyrannulus* Vieillot.

(Type, *Sylvia elata* Latham.)

This also has essentially pycnaspidean tarsi, and for that reason is transferred from the Tyrannidæ to the Cotingidæ. *T. semiflavus* Sclater and Salvin while agreeing in pycnaspidean tarsi is very different otherwise and is the type of my genus *Microtriccus*.

11. *Ornithion* Hartlaub.

(Type. *O. inerme* Hartlaub.)

This also has pycnaspidean tarsi and is most nearly related to *Microtriccus*. The bill in both these genera, but especially in *Ornithion*, is decidedly Cotingine in form. *Ornithion* is, so far as known, monotypic, the other species commonly referred to it being true Tyrannidæ (having exaspidean tarsi) and constitute the genus *Camptostoma* Sclater.

12. *Culicivora* Swainson.(Type, *Muscicapa stenura* Temminck.)

The tarsal envelope of this genus appears on first sight to be exaspidean ; but, while the acrotarsium entirely crosses the outer side of the tarsus and occupies the greater part of the inner side, there is interposed between the two edges a continuous series of very distinct lozenge-shaped scutella. The style of coloration (conspicuously streaked above) is very different from that of any true Tyrannine form and recalls that of some Synallaxinæ (Furnariidæ) or some of the smaller Formicariidæ.

PIPRIDÆ.

The diagnosis of this group as given by Dr. Scater requires no modification, all possessing an exaspidean tarsal envelope, like the Tyrannidæ, but differing from the latter in having the second phalanx of the middle toe at least half (usually wholly) united to the outer toe or else (in the genus *Piprites* only) having the first phalanx of the middle toe wholly coherent with the inner toe. Nevertheless the characters of the group necessitate the exclusion of one genus (*Ptilochloris** Swainson) and its transfer to the Cotingidæ, and the addition (a substraction from Cotingidæ) of another (genus *Aulia* Bonaparte).

COTINGIDÆ.

The Cotingidæ are characterized by Dr. Scater (Cat. Birds Brit. Mus., xiv, 1888, 2) as Oligomyodian birds with pycnaspidean tarsi—no other character for the group being given. Nevertheless, as a matter of fact, a considerable number of the genera belonging to the group as limited by Dr. Scater have *not* pycnaspidean tarsi, though it is equally true that none of them have the tarsal envelope exaspidean. The group is an exceedingly complex one, and I have very strong doubts as to its homogeneity. *Rupicola* I certainly would exclude as a separate family, Rupicolidæ; and I believe that when more is known of their internal structure disintegration of the group will go farther.

So far as external characters are concerned, I am able to diagnose the Cotingidæ, as a separate group from the Tyrannidæ and Pipridæ, only by their different (non-exaspidean) tarsal envelope; but if the group were limited to those forms possessing pycnaspidean tarsi it would be very much more restricted

* I am using the names adopted by Dr. Scater, it being unnecessary to discuss here whether *Laniisoma* Swainson and *Laniocera* Lesson should not displace *Ptilochloris* and *Aulia* respectively.

than the Cotingidæ of Dr. Selater. Those genera of Cotingidæ possessing non-pycnaspidean tarsi present three recognizably different types of scutellation of the planta tarsi; two of these types approach most nearly to the holaspidean and taxaspidean, but for the third, in which the whole planta tarsi consists of smooth integument, I am unable to find a distinctive term.

If certain genera (as *Lipaugus*, *Casiornis*, *Lathria*, and *Attila*) which by nearly universal usage are placed in the Cotingidæ really belong to that group, then most certainly do certain genera usually referred to the Tyrannidæ also belong there, for the character of the tarsal scutellation is essentially if not precisely similar. These genera, *Sirytes*, *Ramphotrigo**, and *Hylonax* (type, *Myiarchus validus* Gosse) I therefore add to the Cotingidæ, as well as others which possess essentially pycnaspidean or at least non-exaspidean tarsi, namely, "*Pogonotriccus*" *zeledoni* (type of genus *Idiotriccus* Ridgway), "*Elaïnea*" or "*Myiopagis*" *gaimardi* (type of *Elaïnopsis* Ridgway), *Tyrannulus elatus*, "*Tyrannulus*" *semiflavus* (type of *Microtricus* Ridgway), and *Ornithion*—possibly also *Habrura*. There should also be added a supposedly Piprine genus, *Ptilochloris* (or *Laniisoma*), which has neither the exaspidean tarsus nor great syndactylism of the Pipridæ. At the same time, the exclusion from Cotingidæ and addition to Pipridæ of the genus *Aulia* (or *Laniocera*) is made necessary, since its foot-structure and tarsal scutellation is typically Piprine.

* Equals *Rhynchoeyclus*, part, of Dr. Selater. *Ramphotrigo* Gray, Cat. Gen. and Subgen. Birds, 1855, 146, ex "Pr. B [onaparte] 1854." (Type, *Platyrhynchus ruficauda* Spix.)